ONR HSIP (1987-1991)

INTRODUCTION

During the past ten years (1982-1991) the Office of Naval Research (ONR) has sponsored a research program for high school students at the Duke University Marine Laboratory. Fifty-seven rising seniors from three North Carolina high schools have been provided the opportunity to do original research working under the direct supervision of the academic staff of the Duke Laboratory. The program lasts for 8-10 weeks each summer and at the end of that period each participant presents an oral report and submits a written report on their research activities. In addition five participants have been given the opportunity to present papers at a national scientific meeting and nine are coauthors of publications.

The staff of the Duke University Marine Laboratory is very pleased with the results of the program and is interested in continuing to have these high quality students work with them on appropriate research projects. The following proposal to continue the ONR Summer High School Intern Program (HSIP) reviews the program accomplishments through the summer of 1991 and requests funding for an additional five-year period, 1992-1997.

59pp

SUMMARY FOR 1982-1991

The ONR-HSIP at the Duke University Marine Laboratory has evolved as a regular part of our annual research and teaching program. Students are selected from three high schools: East Carteret High School, West Carteret High School, and the North Carolina School of Science and Mathematics. The Duke Laboratory is located in Carteret County, NC, and thus feels a special responsibility to provide encouragement for Carteret County students who may be interested in a career in science. The North Carolina School of Science and Mathematics is a special public boarding school of the State of North

Carolina located in Durham, NC, which was established to allow talented high school juniors and seniors from all over the state an opportunity to further their career interests in science and mathematics. The NCSSM provides much more intensive science education than that available in most local public school districts.

The process of selecting interns for the Duke Laboratory summer program begins early to ensure that interns are selected from the largest pool of qualified applicants. In January of each year announcements for the program are sent to a specific counselor at each school. These counselors are responsible for advertising the program within their school by posting notices and announcing the program to junior students in science classes. The counselors receive applications from students, evaluate them and by the end of February they forward, from each school, a group of five applications to the Duke Laboratory. These applications consist of a letter of interest written by the student, a transcript and two letters of recommendation from science teachers who know the student. The applications are then rated by a group of three research scientists from Carteret County: one from the Duke Laboratory, one from the Institute of Marine Sciences of the University of North Carolina and one from the National Marine Fisheries Service, NOAA. Using these ratings the coordinator of the program at the Duke Laboratory selects the two top-ranked students from each school and notifies them by March 31. This early notification ensures that the best potential interns will not have already committed themselves to summer employment elsewhere.

During April of each year the research staff of the Duke Laboratory are asked about their interest in having an intern work with them during the summer months. Insofar as possible the coordinator pairs the expressed interests of the interns with the fields of expertise of the staff of the

Laboratory. The staff who have an intern assigned to them then contact that intern and begin the process of apprenticeship by mail or phone.

The High School Intern Program occurs during an extremely active time of year at the Marine Laboratory. The program overlaps with summer teaching programs, a visiting scholar program and summer seminar programs. The program begins in June the week following the start of summer vacation of the interns. The first day is spent in an intensive orientation to the physical plant, the people, and programs of the Laboratory. Each intern is then turned over to their advisor to begin their research project. The coordinator has frequent contact with both the interns and their advisors to ensure that no problems develop or to solve those that do before they become significant. Local interns spend the day at the laboratory and return home in the evening but are encouraged to return for evening seminars and other Laboratory activities. Interns from out of town live in the dormitories together with undergraduate college students who are taking course work.

The official program ends, after 8-10 weeks, in August. Each intern must present an oral report of their summer's work at a program announced to the whole Marine Laboratory community. In addition a written report is a requirement of all participants. Participants whose work warrants it and whose advisors are interested are encouraged to submit their work for publication and to present their results at a scientific meeting. Over the years several participants have taken advantage of such opportunities.

The results of the past ten years of the ONR/Duke Marine Laboratory HSIP are summarized in a series of appendices to this proposal. Appendix 1 lists the names and addresses of past ONR-HSIP participants along with the title of their research project and the name of their Duke Laboratory advisor. The titles of the projects reflect the broad range of interests of the staff of the Duke Laboratory. In the past, the Marine Laboratory was an

interdepartmental facility of the University with staff from the departments of Zoology, Botany, Geology, Biochemistry and Physiology. In 1991 the facility and its academic staff became a part of the newly created Duke University School of the Environment. The Laboratory plans in 1992 to become a Center of Ocean Sciences within the School. The research programs are as diverse as the staff and this is reflected in the variety of activities of the ONR interns.

Appendix 2 is a cross-referencing of information from Appendix 1 listing the staff members and the names of their interns. To date nineteen of the research staff have participated in the program, as well as two graduate students.

Appendix 3 is a summary of the publications and papers presented by ONR interns from 1982-1991. The list confirms the seriousness with which both the interns and the Laboratory staff view the program. It is very unusual for a high school student to be involved in either the publication of a scientific paper or the presentation of research results at meetings where almost all papers are by professional scientists and their graduate students. Eighteen percent (10 of 57) of the interns have participated in these post-program activities.

Appendix 4 presents the results of a two-page questionnaire which was mailed to 1982-1985 interns in 1986 and to 1987-1990 interns in 1991. The questionnaire was designed to learn what the former interns were doing and how the program may have influenced them. Replies were from twelve of the twenty interns ('82-'85) and thirteen of the thirty-one interns ('86-'90). The comments were retyped to improve their legibility but were not significantly edited. Of particular interest are the comments found on the second page (opposite side) of each questionnaire which indicate how the participant feels

that the program has influenced their post-program activities. Most interns indicated that the program provided them an opportunity to understand much more clearly what a career in scientific research involved. Many said that it encouraged or reinforced their interest in science and mathematics while several indicated that the experience was valuable in a decision not to pursue a career in scientific research.

Appendix 5 lists the post-program educational activities of the 1982-1991 interns insofar as we have been able to determine them from the questionnaire or conversations with high school counselors. Most are attending or have graduated from colleges in North Carolina with the greatest number majoring in biology or mathematics. Career plans are not clear for the most recent interns although medicine (practice or research) heads the list for those who have decided.

PROPOSAL FOR 1992-1997

Plan

The Duke University Marine Laboratory is an ideal place to expose selected high school students to research in the various fields of marine science. The Laboratory combines the academic atmosphere of a teaching institution with the intellectual intensity of a highly successful research institute. Exposing students to basic research in an academic environment ensures that they are taught rather than used as an extra pair of hands. The past five years have been a benefit to the interns and to the Laboratory and the staff is enthusiastic about continuing the program in the future.

The plan for the HSIP is to continue much as we have for the past ten years. During the first two years the program evolved toward the structure which is described above in the summary of our results to date. The number of interns, timing of the program and administrative structure is such that the

program runs very smoothly and fits well with other Marine Laboratory activities.

Timing

Timing of the program is such that the Laboratory must have a commitment of funds for the year by March 31 so that we may notify interns by the first of April. This is necessary because often the best students are those who make summer work plans and commitments early and these are the students which we most like to have in our program.

In response to suggestions from former interns the program was modified in 1991 to allow flexibility in program dates because of conflicts with school and activity schedules. We reduced the time from 10 weeks to 8 weeks for several of the interns and allowed interns to select their own beginning and ending program dates. The reduced time alllowed interns to participate in other school related activities (e.g. sports camps, academic camps) or, in the case of NCSSM interns, to have a two-week visit with family before returning to boarding school. For 1992-1997, as a result of our 1991 experience, we are proposing to offer four 8-week internships and two 10-week internships.

Personnel

The Principal Investigator and Coordinator of the program will be Dr. William Kirby-Smith who has served in that capacity for the past eight years. Dr. Kirby-Smith is a Research Associate Professor who teaches in the regular academic program as well as being principal investigator on several sponsored research programs. His more than twenty-five years' work at the Laboratory ensures that the interns have an experienced mentor to help them and also ensures that the program is well managed.

Funds Requested

The attached budget proposal lists the funds requested for the program by major category. These funds include one month salary for the coordinator, stipends for the interns, living expenses for the interns (room and board for those from out of Carteret County and lunch in the Duke dining hall for those from the County), minor equipment and supplies for the research projects, postage, copying, telephone, and travel to cover anticipated expenses for intern(s) to present a paper at a scientific meeting and for local travel involved with the research projects.

Reporting

An annual technical report will be submitted to the contract officer by November 30 of each year. The report will describe the results of the previous summer's program.

CURRICULUM VITAE

William W. Kirby-Smith

Personal

Born November 5, 1942, Sewanee, Tennessee

Education

1964 A.B. Biology, University of the South, Sewanee, Tennessee
1970 Ph.D. Zoology, Duke University, Durham, North Carolina

Positions

1970 - 1975	Research Associate Duke University Marine Laboratory
1970 - present	Director of the Duke University Marine Laboratory Natural History Resource Center
1975 - 1982	Research Scientist, Duke University Marine Laboratory
1982 - present	Research Associate Professor, Duke University Marine Laboratory

Societies

American Association for the Advancement of Science
American Institute of Biological Scientists
American Society of Limnology and Oceanography
Ecological Society of America
Estuarine Research Federation

Activities

1973	Research Expedition to the Fiji Islands (10 weeks)
1976	National Science Foundation/Harbridge House Review of the International Decade of Ocean Exploration
1975	Visiting lecturer and advisor for the staff of the Biology Department of the University of Bahia, Salvador, Brazil (7 weeks). Rockefeller Foundation.
1976	National Science Foundation Workshop on Secondary Production
1978 - 1979	NOAA R/V ALVIN Scientific Review Program Committee
1978 - 1991	Member of the Coastal Resources Advisory Council of the State of North Carolina

Activities (cont'd)

1978	Research Advisor at the Naval Oceanographic Institute, Guayaquil, Ecuador (8 weeks).
1979	Environmental Protection Agency Workshop on Nutrient Enrichment in Estuaries
1980	National Science Foundation Review Panel for the Undergraduate Research Participation Program
1981 - 1982	National Academy of Sciences. Consultant to the Marine Board on the fate and effects of drilling muds and cutting on the OCS.
1982	Co-organizer (U.S., Canada, and European Participation) of the "International Symposium on Utilization of Coastal Ecosystems," held at the University of Rio Grande, R.S. Brazil. (N.O.A.A. and the Rockefeller Foundation)
1983 - 1986	Editor for Proceedings of International Symposium on Utilization of Coastal Ecosystems
1985 - present	Technical Advisory Committee to the N.C. National Estuarine Research Reserve Program
1988	Vice Chairman, Coastal Resources Advisory Council

Research

1969 - 1970	The effects of water currents on the growth of the bay scallop, Acquipecten irradians. N.C. Board of Science and Technology.
1970 - 1979	Phytoplankton/detritus concentrations and their effects on the growth of suspension feeding animals.
1974 - 1979	Water quality ramifications in estuaries of converting forest to intensive agriculture. (with R.T. Barber) North Carolina Water Resources Research Institute
1975 - 1980	Effects of thermal additions on the dynamics of the fouling communities at Beaufort, North Carolina. Environmental Protection Agency
1978 - 1979	Ecological effects of disposal of dredge spoils from the Intracoastal Waterway in North Carolina. U.S. Army Corps of Engineers

Research (cont'd)

1978 - 1979	Description of benthic communities near the discharges from Weyerhaeuser pulpmills in North Carolina. Weyerhaeuser Corporation
1980 - 1983	Characteristics of live bottom communities of the North Carolina Continental Shelf. U.S. Dept. of Interior, Minerals Management Service.
1984 - 1985	The effects of natural disturbance on a continental shelf live bottom community. U.S. Dept. of Interior, Minerals Management Service.
1985 - 1988	Habitat mapping of the N.C. National Estuarine Research Reserve System, U.S. Dept. of Commerce through N.C. Office of Coastal Management.
1985 - present	The effects of open marsh water management on invertebrate, fish and bird populations. N.C. Dept. of Human Resources, Division of Health Services.
1986 - present	Fates and Effects of Herbicides and Pesticides in Estuaries. U.S. Environmental Protection Agency.
1989 - present	Benthic ecology of Isaac Creek. Weyerhaeuser Company
1989 - present	Water quality and estuarine circulation. Weyerhaeuser Company

Teaching

Current

Spring Term	B296S Natural History of Coastal Marine Systems (2 s.h.) B192 Independent Study (3-4 s.h.) MBS100 Marine Environment (6 s.h.)
Summer Term I	B176 Marine Invertebrate Zoology (6 s.h.)
Fall Term	B176 Marine Invertebrate Zoology (4 s.h.) B192 Independent Study (3-4 s.h.)

Past

1973 - present	MRS100 The Marine Environment (Cooperative Undergraduate Program in Marine Science) A 6-week intensive program in Oceanography, Marine Biology and Independent Study for non-Duke students (6 s.h. April-May)
1983-1987	Bio 10L Marine Biology (4 s.h. Summer Terms 1 and 3)

Teaching (cont'd)

1986-1988	Zoo 76L Marine Invertebrate Diversity (4 s.h. - Fall Term)
1988 - present	Zoo 176L Marine Invertebrate Zoology (4 s.h. - Fall and Summer Term I)
1972 - present	Bio 191, 192 Independent Study (3-4 s.h. Fall and/or Spring Term)
1981 - present	Bio 296S Natural History of Coastal Marine Systems (2 s.h. Spring Term)
1984 - present	Office of Naval Research: High School Intern Program (Summer, 6 participants, 8-10 weeks)
1984	Bio 167 Analysis of Marine Ecosystems (4 s.h. Fall Term)
1983	Bio 169 Organization of Marine Communities (4 s.h. Fall Term)
1978	Coordinator for NSF Undergraduate Research Participant Program and Advisor for NSF Student Originated Studies Program
1971 - present	Curator/Director, Natural History Resource Center. Provides advice and facilities for undergraduate/graduate students in residence at DUML.

Field of Expertise

Ecology and feeding physiology of marine animals
Taxonomy of marine invertebrates
Distribution and abundance of marine invertebrates
Ecology of fouling communities
Effects of thermal additions (thermal pollution)
Effects of land alterations on water quality in estuaries
Ecology of epibenthic communities on the Continental Shelf
Effects of agrochemical runoff in estuaries
Ecology of fecal coliform bacteria

Publications

1970 Kirby-Smith, W.W. Growth of the scallops, Argopecten irradians concentricus and Argopecten gibbus, as influenced by food and temperature. Ph.D. thesis, Duke University.

1972 Kirby-Smith, W.W. Growth of the bay scallop: the influence of experimental water currents. J. Exp. Mar. Biol. & Ecol., 8:7- 18.

1973 Barber, R.T. and Kirby-Smith, W.W. The oceans as ultimate sinks for wastewaters and wastewater residuals. In: Ultimate Disposal of Wastewaters and Their Residuals. F.E. McJunkin and P.A. Vesilin, editors, Water Resources Research Institute, N.C. State University, pp. 199-215.

1974 Kirby-Smith, W.W. and Barber, R.T. Suspension-feeding aquaculture systems: Effects of phytoplankton concentration and temperature on growth of the bay scallop. Aquaculture 3:135- 145.

1976 Kirby-Smith, W.W. The detritus problem and the feeding and digestion of an estuarine organism. In: Estuarine Processes, Vol. I., pp. 469-479. Academic Press, Inc., New York.

1978 Kirby-Smith, W.W. An Annotated Checklist of the Biota of the Coastal Zone of Carolina. Ed. by R.C. Zingmark. Section VII. Echinoderms. University of South Carolina Press, Columbia, South Carolina.

Barber, R.T., Kirby-Smith, W.W. and Parsley, P.E. Wetlands alterations for agriculture. In: Wetland Functions and Values: The State of Our Understanding, American Water Resources Association.

1979 Burle, E. and Kirby-Smith, W.W. Growth of the bay scallop, Argopecten irradians fed an artificial diet rich in protein. Estuaries, 2:206-208.

Van Dover, C. and Kirby-Smith, W.W. Field Guide to Common Marine Invertebrates of Beaufort, North Carolina. Part I: Gastropods, Bivalves, Amphipods, Decapods, Echinoderms. Illustrated by Mary Ann Nelson. Published by Duke University Marine Laboratory.

Kirby-Smith, W.W. and R.T. Barber. The water quality ramifications in estuaries of converting forest to intensive agriculture. Water Resources Research Institute of the University of North Carolina, Raleigh, North Carolina. WRRI Report No. 148.

Publications (cont'd)

1985 Chao, L.N. and Kirby-Smith, W.W. (eds.). Vol.I. Proceedings of the International Symposium on "Utilization of Coastal Ecosystems: Planning, Pollution and Productivity," 22-27 November 1982, Rio Grande, RS, Brazil. Published by the University of Rio Grande do Sul, Brazil.

1986 Kirby-Smith, W.W. and Ustach, J. Resistance to hurricane disturbance of an epifaunal community on the continental shelf off North Carolina. Estuarine, Coastal, and Shelf Science 23:433-442.

Ustach, J., Kirby-Smith, W.W. and Barber, R.T. Effect of watershed modification on a small coastal plain estuary. Pp. 177-192 in D.A. Wolfe (ed.), Estuarine Variability. Academic Press, NY.

1987 Vaughan, N.D., Johnson, T.C., Mearns, D.L., Hine, A.C., Kirby- Smith, W.W., Ustach, J.F., Riggs, S.R. The impact of hurricane Diana on the North Carolina continental shelf. Marine Geology 76:169-176.

Anderson, A.L., Slaff, M., and Kirby-Smith, W. Changes in vegetation, hydrologic regime, and the distribution of fish and larval mosquitoes in two North Carolina marshes. Proceedings of the Eighth Annual Meeting of the Society of Wetlands Scientists. Seattle, Washington, May 26-29, 1987.

Anderson, A.L., Slaff, M., and Kirby-Smith, W. Two-year changes in flora and hydrographic regime in a Spartina alterniflora dominated marsh vs. a Juncus roemerianus dominated marsh in North Carolina. In N.V. Brodtmann, Jr. (ed.), Proceedings of 4th Water Quality and Wetlands Management Conference: Coastal Ecology. New Orleans, LA, September 24-25, 1987.

1988 Takacs, R.L., Forward, R.B., Jr., and Kirby-Smith, W. Effects of the herbicide Alachlor (Lasso®) on larval development of the mud crab, Rhithropanopeus harrisii (Gould). Estuaries 11(2):79- 82.

1989 Diamond, D.L., Scott, L.K., Forward, R.B., Jr., and Kirby-Smith, W.W. Respiration and osmoregulation of the estuarine crab Rhithropanopeus harrisii (Gould): Effects of the herbicide alachlor. Comp. Biochem. Physiol. 93A(2):313-318.

Kirby-Smith, W.W. The community of small macroinvertebrates associated with rock outcrops on the continental shelf of North Carolina. In Proceedings of the N.C. Coastal Oceanography Symposium. R.Y. George (ed.).

Publications (cont'd)

Kirby-Smith, W.W. and Costlow, J.D. The Newport River estuarine system. Univ. N.C. National Sea Grant Program. UNC-56-89-04. North Carolina State University, Raleigh, NC.

1989 Kirby-Smith, W.W., Forward, R.B., Jr., and Thompson, S. Use of grass shrimp (Palaemonetes pugio) larvae in field bioassays of the effects of agricultural runoff into estuaries. Pp. 29-36 in D.L. Weigmann (ed.) Pesticides in Terrestrial and Aquatic Environments. Proceedings of a National Research Conference, May 11-12, 1989. Virginia Water Resources Research Center, Blacksburg, VA.

Chao, L.N. and Kirby-Smith, W.W. (eds.). Vol. II. Proceedings of the International Symposium on "Utilization of Coastal Ecosystems: Planning, Pollution and Productivity," 22-27 November 1982, Rio Grande, RS, Brazil. Published by the University of Rio Grande do Sul, Brazil.

Technical Reports

1978 Kirby-Smith, W.W. Williams, A.H. Evaluation of long-term ecological effects of disposal of dredged material from the Atlantic Intracoastal Waterway in North Carolina. U.S. Army Corps of Engineers, Wilmington District. Wilmington, N.C. Contract Number DACW54-78-C-0062.

Kirby-Smith, W.W. and Van Dover, C. The distribution and abundance of animals comprising the benthic communities of the Lower Neuse and Roanoke Rivers, North Carolina. Weyerhaeuser Company, Longview, Washington.

1981 Duke University Marine Laboratory. An investigation of live bottom habitats north of Cape Fear, North Carolina. South Atlantic OCS Area Living Marine Resources Study. Volume II. Bureau of Land Management Contract AA551-CT9-27. W.W. Kirby-Smith, North Carolina Project Coordinator.

1982 Kirby-Smith, W.W. Effects of thermal additions on the dynamics of fouling communities at Beaufort, North Carolina. U.S. Environmental Protection Agency. Grant No. R803856.

Costlow, J.D. and Kirby-Smith, W.W. International Training Program in the Marine Sciences. Report to the Rockefeller Foundation and the United Nations Educational, Scientific, and Cultural Organization.

1983 Duke University Marine Laboratory. An Investigation of Live Bottom Habitats North of Cape Fear, N.C. South Atlantic OCS Area Living Marine Resources Study. Volume II. Minerals Management Service Contract. W.W. Kirby-Smith, North Carolina Project Coordinator.

Technical Reports (cont'd)

1985 Kirby-Smith, W.W. and Ustach, J. Effects of a Natural Disturbance on a Continental Shelf Live Bottom Community off North Carolina. OCS Study, U.S. Department of the Interior, Minerals Management Service 85-0055.

1987 Habitat Mapping of the Rachel Carson Component of the North Carolina National Estuarine Research Reserve. Report to U.S. Dept. of Commerce, NOAA.

1988 Habitat Map of Rachel Carson Component of the N.C. National Estuarine Research Reserve. Available from: N.C. Division of Coastal Management, Estuarine Research Reserve Program. NC- NRCD, Raleigh, NC.

1989 Habitat Maps of the North Carolina National Estuarine Research Reserve: (1) Middle Marsh Component, (2) Currituck Component, (3) Masonboro Component, (4) Zeke's Island Component. Available from: N.C. Division Coastal Management, Estuarine Research Reserve. NC-NRCD, Raleigh, NC

Proposed Budget for Sponsored Research
to Office of Naval Research
Effective dates: May 1, 1992 through April 30, 1997

	YR01	YR02	YR03	YR04	YR05	TOTAL
Personnel						
W. Kirby-Smith, Coordinator (1 mo)	4,356	4,617	4,894	5,188	5,499	24,554
Fringe Benefits	989	1,048	1,116	1,183	1,254	5,590
Total Personnel	5,345	5,665	6,010	6,371	6,753	30,144
Stipends 4 for 8 weeks, 2 for 10 weeks, $240/wk	12,480	12,480	12,480	12,480	12,480	62,400
Living Expenses 2 NCSSM interns (8 weeks) 4 Carteret County interns (2 for 8 wks, 2 for 10 wks)	4,220	4,430	4,652	4,884	5,128	23,314
Other Direct Costs						
Supplies and materials ($600/intern)	3,600	3,600	3,600	3,600	3,600	18,000
Telephone, FAX, postage, copies	500	500	500	500	500	2,500
Travel	1,700	1,700	1,700	1,700	1,700	8,500
Total Direct Costs	27,845	28,375	28,942	29,535	30,161	144,858
Indirect Costs (52% MTDC)	14,479	14,755	15,050	15,358	15,684	75,326
Amount of this Request	42,324	43,130	43,992	44,893	45,845	220,184
Cost/student	7,054	7,188	7,332	7,482	7,641	

Appendix 1. ONR HSIP Participants, 1982-1991

1982

Mr. Robin J. Cunningham
106 S. Elm Street
Louisburg, NC 27549

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. J. Bonaventura (Protein structure and function)
Research Topic/Paper Title: Leghemoglobin isolation from soybean root nodules

Ms. Margaret (Meg) Gatling
2527 Shelburne Place
Charlotte, NC 28212

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. J. Ramus (Algal ecological physiology)
Research Topic/Paper Title: The effect of nitrogen pulses on chlorophyll levels in natural assemblages of marine phytoplankton

Ms. Carla Humphrey
1 Ponderose Lane
Newport, NC 28570

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. J.D. Costlow (Marine invertebrate embryology and experimental zoology)
Research Topic/Paper Title: The effects of vectobac on growth and survival of the larvae of the mud crab Rhithropanopeus harrisii

Ms. Linda Paylor
P.O. Box 85
Harkers Island, NC 28531

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. R.B. Forward (Physiology of marine animals)
Research Topic/Paper Title: Asymmetrical tidal behavior in the fiddler crab Uca pumilator

1983

Mr. Eric Bamish
Route 3, Box 39
Newport, NC 28570

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. D. McClay (Developmental biology)
Research Topic/Paper Title: Effects of antibodies on the development of Lytechinus variegatus and Arbacia punctulata from fertilization to pluteus

1983 (cont'd)

Ms. Amy Betts
210 Vine Street
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. I. Hooper (Chemical communication)
Dr. D. Rittschof (Chemical ecology)
Research Topic/Paper Title: Inhibition of barnacle settlement by natural products from a sponge

Ms. Laine E. Doggett
P.O. Box 1016
Rutherfordton, NC 28139

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. R.T. Barber (Biological oceanography)
Research Topic/Paper Title: Nutrient ratios and nutrient temperature relationships in the eastern tropical Pacific during 1982-1983 El Nino

Mr. Vincent Knight
Rt. 3, Box 317
Mt. Gilead, NC 27306

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Drs. C. and J. Bonaventura (Protein structure and function)
Research Topic/Paper Title: The effect of salinity on the occurrence of hemocyanin as hexamers and dodecamers in the blue crab (Callinectes sapidus)

1984

Ms. Rebecca Heath Cole
200 S. 34th Street
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. R.B. Forward (Physiology of marine animals)
Research Topic/Paper Title: Hatching rhythms in the shrimp Palaemonetes pugio

Mr. Robert F. Fink
P.O. Box 13
Gloucester, NC 28528

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. J. Ramus (Algal ecological physiology)
Research Topic/Paper Title: Speciation in the seaweed Gracilaria

1984 (cont'd)

Ms. Ivy L. Gates
Rt. 2, Box 594
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. J.D. Costlow (Marine invertebrate embryology and experimental zoology)
Dr. B. Rittschof (Chemical ecology)
Research Topic/Paper Title: Biological effects of natural products from a colonial tunicate, Aplidium constellatum

Mr. J. Kevin Jones
382 Virginia Avenue
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Dr. J. Ustach (Marsh ecology)
Research Topic/Paper Title: The distribution and abundance of the clam, Rangia cuneata, in the upper Neuse River estuary

Ms. Miriam Katie Leiva
9201 Sandburg Avenue
Charlotte, NC 28213

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Drs. C. and J. Bonaventura (Protein structure and function)
Research Topic/Paper Title: (1) Active site heterogeneity in subunits and oxygen binding domains of hemocyanin; (2) Quantification of novel materials for iron chelation; (3) A search for an alternative bait for the blue crab, Callinectes sapidus

Mr. Brian T. Rice
610 Leander Street
Shelby, NC 28150

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. R.T. Barber (Biological oceanography)
Research Topic/Paper Title: The pattern of temporal variability of selected oceanographic properties in the Galapagos Islands during the 1982-83 El Nino

1985

Ms. Laura Susan Barlow
598 Trent Acres
Pollocksville, NC 28573

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. D. Rittschof (Chemical ecology)
Research Topic/Paper Title: Chemoreception in land hermit crabs

1985 (cont'd)

Ms. Amy Jo Gillespie
115 Gull Harbor Drive
Newport, NC 28570

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. T. Johnson (Geological oceanography)
Research Topic/Paper Title: Organic carbon analysis of Lake Turkana sediments

Mr. Bobby Bryan Goodwin, Jr.
Rt. 1, Box 38
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Research Topic/Paper Title: Habitat maps of the Rachel Carson Estuarine Sanctuary using aerial photographs*

Ms. Marta Pilar Sanderson
Rt. 3, Box 24
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. R.T. Barber (Biological oceanography)
Research Topic/Paper Title: Temperature-nutrient relationships in the upper layers of the equatorial Pacific

Ms. Melissa Anne Venable
213 Hodges Street
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. J. Ramus (Algal ecological physiology)
Research Topic/Paper Title: Frequency of nitrogen fertilization in Ulva curvata and Codium decorticatum

Ms. Pamela Lynn Yount
Rt. 5, Box 100
Hickory, NC 28601

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. D. McClay (Developmental biology)
Research Topic/Paper Title: Comparison of antigen expression in the sand dollar and sea urchin

*No formal paper required insofar as product of research effort resulted in a group of habitat maps.

1986

Mr. Jim Curtis
110 S. Yaupon Terrace
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. J. Ramus (Algal ecological physiology)
Research Topic/Paper Title: Horizontal water structure of Newport estuarine waters

Ms. Sarah Potter
107 Pleasant Drive
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. R.T. Barber (Biological oceanography)
Research Topic/Paper Title: The concentration of nutrients and the relationship between the physical properties in the Galapagos region of the Pacific during the 1982-83 El Nino

Ms. Ellen Safrit
1760 Parker Lane
Henderson, NC 27536

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. J. Ramus (Algal ecological physiology)
Research Topic/Paper Title: The vertical structure of the water column in estuarine waters

Mr. Matt Wachowiak
9025 Holesgate Road
Charlotte, NC 28215

School: NC School of Science & Mathematics; Durham, NC 27707
Advisor: Dr. D. Rittschof (Chemical ecology)
Research Topic/Paper Title: The ability of ghost crabs (Ocypode quadrata) to locate food using olfaction

Mr. David Way
P.O. Box 214
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. J. Ustach (Marsh ecology)
Research Topic/Paper Title: Sea squirts (Styela plicata): Can they filter bacteria?

Ms. Ann-Marie Willis
P.O. Box 1716
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Research Topic/Paper Title: Habitat mapping of the Rachel Carson Estuarine Sanctuary

1987

Ms. Sarah A. Boese
111 Sandpiper Drive
Newport, NC 28570

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. J. Ramus (Algal ecological physiology)
Research Topic/Paper Title: Vertical optical properties within the water column of the Newport River estuary

Ms. Laurel P. Falls
2610 Evans Street
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Research Topic/Paper Title: Diurnal variability in nutrients and phytoplankton biomass in the South River

Ms. N. Leslie Hill
1507 Front Street
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. D. Rittschof (Chemical ecology)
Research Topic/Paper Title: The vertical and horizontal movements of hard clams Mercenaria mercenaria

Mr. Hugh M. Howard
426 Scott Avenue
Jacksonville, NC 28540

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. J.D. Costlow (Crustacean development)
Research Topic/Paper Title: Effects of the pesticide Dimilin on regeneration of the mud crab, Rhithropanopeus harrisii

Mr. Mark D. Ollis
2 Foxridge Road
Chapel Hill, NC 27514

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. R.T. Barber (Biological oceanography)
Research Topic/Paper Title: Nutrient studies during the Coastal Transition Zone Pilot Program

1987 (cont'd)

Mr. Duncan S. Parks
1609 Oaklawn Avenue
Greenville, NC 27834

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. J. Ramus (Algal ecological physiology)
Research Topic/Paper Title: Factors affecting the horizontal distribution of algae in the Newport River estuary: irradiance, turbidity, nutrient availability, and tidal action

Ms. L. Paige Pence
P.O. Box 1511
Morehead City, NC 28557

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. T. Johnson (Geological oceanography)
Research Topic/Paper Title: Geological study of Lake Malawi - silicon analysis

1988

Ms. Jennifer M. Bennett
P.O. Box 1659
Atlantic Beach, NC 28512

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. J.P. Sutherland (Marine ecology)
Research Topic/Paper Title: The effects of flow and feeding by Styela plicata on the larval settlement in a subtidal community

Ms. Marieke J. Brouwer
124 Charles Street
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. W. Kirby-Smith (Marine Ecology)
Research Topic/Paper Title: The effect of school size on the efficiency of predation

Ms. Regan A. Huff
100 Kirkwood Drive
Chapel Hill, NC 27514

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. D. Rittschof (Chemical ecology)
Research Topic/Paper Title: Attraction of the hermit crab Clibanarius vittatus to a chemical in wounded gastropod flesh

1988 (cont'd)

Ms. S. Celeste Posey
920 Cornoustie Circle
Cary, NC 27511

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. R.B. Forward (Physiology of marine animals)
Research Topic/Paper Title: Determining who controls larval release in fiddler crabs through shifted light-dark cycles and effects of ablating ovigerous females on larval release

Mr. Dewey M. Sasser
Rt. 2, Box 604
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Research Topic/Paper Title: A comparison between the effects of forest runoff and farm runoff on the South River estuary

Mr. Joseph C. Taylor
112 Hidyette Avenue
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. T. Johnson (Geological oceanography)
Research Topic/Paper Title: Sedimentological studies of Lake Turkana (Kenya)

1989

Ms. Eun Joo Cho
7820 Lawyers Road
Charlotte, NC 28212

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. T. Johnson (Geological oceanography)
Research Topic/Paper Title: Development of a cost efficient remote sensing system

Mr. W. Jay Cuthrell
1811 Mulberry Street
P.O. Box 881
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC, 28516
Advisor: Dr. S. Ortega (Benthic marine ecology)
Research Topic/Paper Title: Spatial and temporal variation in oyster larval availability

1989 (cont'd)

Ms. Alisa Dawn Ingram
905 Howell Street
Greenville, NC 27834

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. W. Hanley (Algal ecophysiology)
Research Topic/Paper Title: Determination of the susceptibility of Ulva, Dictyota, and Gracilaria to photoinhibition through analysis of growth rates, photosynthesis, and fluoresence

Ms. Carrie L. Kappel
P.O. Box 94
Gloucester, NC 27834

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. M. Brouwer (Role of metal ions in biological systems)
Research Topic/Paper Title: Studies of the effects of hypo-osmotic conditions on hemocyanin synthesis, oxygen binding properties, and subunit composition of Callinects sapidus hemocyanin

Mr. Chris Martin
P.O. Box 367
Atlantic Beach, NC 28512

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Research Topic/Paper Title: Studies of the physical effects of forest runoff on Isaac Creek

Ms. Allison N. Smith
P.O. Box 116
Salter Path, NC 28575

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. J. Ramus (Algal ecological physiology)
Dr. Bruce Kenney (Algal ecological physiology)
Research Topic/Paper Title: Studies of time scales of variability and whether they influence phytoplankton and fisheries

1990

Mr. John B. Carlson
1105 Ann Street
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. J. Ustach (Marsh ecology)
Research Topic/Paper Title: Effects of the benthic mollusk population on the South River

1990 (cont'd)

Ms. Julie K. Chou
4205 Boxwood Road
Raleigh, NC 27612

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. D. Rittschof (Chemical ecology)
Research Topic/Paper Title: Peptide induced behavior of Pagurus longicarpus in the lab and in the field

Ms. Sharon S. Chow
8849 Wildwood Links
Raleigh, NC 27613

School: NC School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. A. Clare (Invertebrate biology)
Research Topic/Paper Title: The hatching substance of the barnacle, Balanus amphitrite

Ms. Zoey A. Forward
414 Ann Street
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Research Topic/Paper Title: Sediment profiles of the South River estuary

Ms. Elizabeth A. Oliver
95 Holly Court
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. R.B. Forward (Physiology of marine animals)
Research Topic/Paper Title: Effects of salinity and peptides on crustacean larval development

Ms. Susan D. Talley
4003 Leslie Lane
Emerald Isle, NC 28594

School: West Carteret High School; Morehead City, NC 28557
Advisor: Mr. M. Kingston (Benthic microalgae)
Research Topic/Paper Title: Effects of groundwater flow on microalgal patchiness

1991

Mr. Charles J. Craig
P.O. Box 405
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Ms. K. Reinsel (Marine ecology)
Research Topic/Paper Title: Effects of fiddler crab foraging and tidal inundation on microalgal biomass on Bird Shoal

1991 (cont'd)

Mr. William L. Falls
2610 Evans Street
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. W. Kirby-Smith (Marine ecology)
Research Topic/Paper Title: Ammonia and chlorophyll cycles in upper estuarine creeks

Mr. Mario G. Ferruzzi
304 Fairview Drive
Beaufort, NC 28516

School: East Carteret High School; Beaufort, NC 28516
Advisor: Dr. A. Clare (Invertebrate biology; chemical ecology)
Research Topic/Paper Title: Studies of barnacle hatching and settlement pheromones and signal transduction

Mr. Jason N. Katz
4704 Beech Crest Place
Charlotte, NC 28269

School: NC High School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. D. Rittschof (Chemical ecology)
Research Topic/Paper Title: Chemically stimulated alarm/investigation responses of hermit crabs as related to shell fit and size

Ms. Prerana (Penny) N. Patel
Rt. 9, Box 264
Hickory, NC 28601

School: NC High School of Science & Mathematics; Durham, NC 27705
Advisor: Dr. R. Winn (Aquatic toxicology)
Research Topic/Paper Title: Designer genes: developing a transgenic fish for environmental evaluations

Mr. J. Samuel Taylor
4 Grady Court
Morehead City, NC 28557

School: West Carteret High School; Morehead City, NC 28557
Advisor: Dr. J.D. Costlow (Crustacean development)
Research Topic/Paper Title: Culture of regenerated chelae of the larvae of the crab Rhithropanopeus harrisii

Appendix 2. ONR HSIP Advisors and Interns, 1982-1991

Dr. Richard T. Barber		
1983	Laine E. Doggett	NC School of Science and Mathematics
1984	Brian T. Rice	NC School of Science and Mathematics
1985	Marta P. Sanderson	East Carteret High School
1986	Sarah E. Potter	East Carteret High School
1987	Mark D. Ollis	NC School of Science and Mathematics
Drs. Celia and Joseph Bonaventura		
1982	Robin J. Cunningham	NC School of Science and Mathematics
1983	Vincent Knight	NC School of Science and Mathematics
1984	M. Katie Leiva	NC School of Science and Mathematics
Dr. Marius Brouwer		
1989	Carrie L. Kappel	East Carteret High School
Dr. Anthony Clare		
1990	Sharon S. Chow	NC School of Science and Mathematics
1991	Mario G. Ferruzzi	East Carteret High School
Dr. John D. Costlow		
1982	Carla Humphrey	West Carteret High School
1984	Ivy L. Gates	East Carteret High School
1987	Hugh M. Howard	NC School of Science and Mathematics
1991	Samuel J. Taylor	West Carteret High School
Dr. Richard B. Forward, Jr.		
1982	Linda Paylor	East Carteret High School
1984	R. Heath Cole	West Carteret High School
1988	S. Celeste Posey	NC School of Science and Mathematics
1990	Elizabeth A. Oliver	West Carteret High School
Dr. William J. Henley		
1989	A. Dawn Ingram	NC School of Science and Mathematics
Dr. Irving Hooper		
1983	Amy Betts	East Carteret High School
Dr. Thomas C. Johnson		
1985	Amy J. Gillespie	West Carteret High School
1987	L. Paige Pence	East Carteret High School
1988	Joseph C. Taylor	West Carteret High School
1989	Eun Joo Cho	NC School of Science and Mathematics
Dr. Bruce E. Kenney		
1989	Allison H. Smith	West Carteret High School
Mr. Michael B. Kingston		
1990	Susan D. Talley	West Carteret High School

ONR HSIP Advisors and Interns, 1982-1991 (cont'd)

Dr. William W. Kirby-Smith		
1984	J. Kevin Jones	West Carteret High School
1985	B. Bryan Goodwin, Jr.	East Carteret High School
1986	Ann-Marie Willis	West Carteret High School
1987	Laurel P. Falls	West Carteret High School
1988	Marieke J. Brouwer	East Carteret High School
"	Dewey M. Sasser	East Carteret High School
1989	Chris Martin	West Carteret High School
1990	Zoey A. Forward	East Carteret High School
1991	William L. Falls	West Carteret High School
Dr. David McClay		
1983	Eric Bemish	West Carteret High School
1985	Pamela L. Yount	NC School of Science and Mathematics
Dr. Sonia Ortega		
1989	W. Jay Cuthrell	East Carteret High School
Dr. Joseph S. Ramus		
1982	Margaret Gatling	NC School of Science and Mathematics
1984	Robert F. Fink	East Carteret High School
1985	Melissa A. Venable	West Carteret High School
1986	Jim Curtis	West Carteret High School
"	Ellen Safrit	NC School of Science and Mathematics
1987	Sarah A. Boese	West Carteret High School
"	Duncan S. Parks	NC School of Science and Mathematics
1989	Allison H. Smith	West Carteret High School
Ms. Kathy Reinsel		
1991	Charles J. Craig	East Carteret High School
Dr. Daniel Rittschof		
1983	Amy Betts	East Carteret High School
1984	Ivy L. Gates	East Carteret High School
1985	Laura S. Barlow	NC School of Science and Mathematics
1986	Matt Wachowiak	NC School of Science and Mathematics
1987	M. Leslie Hill	East Carteret High School
1988	Regan A. Huff	NC School of Science and Mathematics
1990	Julie K. Cheu	NC School of Science and Mathematics
1991	Jason N. Katz	NC School of Science and Mathematics
Dr. John P. Sutherland		
1988	Jennifer M. Bennett	West Carteret High School
Dr. Joseph Ustach		
1984	J. Kevin Jones	West Carteret High School
1986	David Way	East Carteret High School
1990	John B. Carlson	East Carteret High School
Dr. Richard Winn		
1991	Prerana N. Patel	NC School of Science and Mathematics

Appendix 3. ONR HSIP Summary of Publications and Papers Presented

Laura S. Barlow (1985)
Dr. D. Rittschof

1. Paper entitled, "Studies of olfaction and taste in land hermit crabs," presented at the American Society of Zoologists Meeting, Baltimore, Maryland, December 1985
2. Junior author of paper entitled, "Laboratory studies of responses of land hermit crabs to volatile odors," submitted to the Journal of Chemical Ecology
3. Data presented in talk by D. Rittschof at the International Society of Chemical Ecology Meetings, San Francisco, California, June 1986

Amy Betts (1983)
Drs. I. Hooper and D. Rittschof

Paper entitled, "Inhibition of barnacle settlement by natural products from a sponge," published in BASE Journal of Science and Technology, University of California - Berkeley, June 1984

Rebecca Heath Cole (1984)
Dr. R.B. Forward

Paper entitled, "Hatching rhythms in the shrimp Palaemonetes pugio," presented at the North Carolina Science Academy Meeting at Guilford College, Greensboro, North Carolina, March 1985

Laine E. Doggett (1983)
Dr. R.T. Barber

First author of publication: Doggett, L.E. and R.T. Barber. 1983. Nutrient ratios and nutrient temperature relationships in the eastern tropical Pacific during the 1982/83 El Nino. EOS 64:1045-1046.

Mario G. Ferruzzi (1991)
Dr. T. Clare

Contributing author to upcoming manuscript which will be submitted for publication

M. Leslie Hill (1987)
Dr. D. Rittschof

Fifth author of publication: Roberts, D., D. Rittschof, D.J. Gerhart, A.R. Schmidt, and L.G. Hill. 1989. Vertical migration of the clam Mercenaria mercenaria (L.) (Mollusca: Bivalvia): environmental correlates and ecological significance. J. Exp. Mar. Biol. Ecol. 126:271-280.

Jason M. Katz (1991)
Dr. D. Rittschof

Paper entitled, "Chemically stimulated alarm/investigation responses of hermit crabs as related to shell fit and crab size," presented at the Annual Meeting of American Society of Zoologists, December 1991. Publication of paper pending.

Marta P. Sanderson (1985)
Dr. R.T. Barber

1. Third author of publication: Chavez, F.P., R.T. Barber and M.P. Sanderson. 1985. The slope of the temperature-nitrate relationship and the strength of the equatorial undercurrent: I. Cool conditions. Trop. Ocean-Atmos. Newslett. 33:8-10.
2. Paper (see above) presented at the Ocean Sciences Meeting of AGU and ASLO, New Orleans, Louisiana, January 1985

Melissa A. Venable (1985)
Dr. J. Ramus

1. Third author of paper entitled, "Growth rates of fugitive and persistent seaweed species in response to varied by non-random additions of N-nutrient," presented at the 7th Southeastern Phycological Colloquy, Beaufort, North Carolina, October 1985 and presented by J. Ramus and W. Henley at the American Society of Limnology and Oceanography Meeting, June 1986
2. Junior author of paper entitled, "Seaweed life form, growth rate and the variable environment"; published at later date

Matt Wachowiak (1986)
Dr. D. Rittschof

Third author of publication: Wellins, C.A., D. Rittschof, and M. Wachowiak. 1989. Location of volatile odor sources by ghost crab Ocypode quadrata (Fabricius). J. Chem. Ecol. 15:1161-1169.

Appendix 4a. ONR HSIP Post-Internship Information (1982-1985)

Duke University Marine Laboratory
Beaufort, North Carolina

OMR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Meg Gatling ('82)
(see note on reverse)

NAME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1983

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: UNC at Chapel Hill

Presently attending (X); Anticipated attendance ( )

MAJOR: Chemistry (Premed) DEGREE SOUGHT: Bachelor of Science

EXPECTED DATE OF GRADUATION: May 1987

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: ?

ANTICIPATED MAJOR: DEGREE SOUGHT:

HONORS (high school and college or university):
National Merit Scholar
*Morehead Scholarship recipient at UNC-Chapel Hill
Member of Physics Society at UNC-Chapel Hill

*Also offered a scholarship to Duke University and a financial package at Princeton University, but chose the Morehead Scholarship at UNC-CH

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:

II: EMPLOYMENT OR PROFESSIONAL PLANS: I hope to attend medical school.

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (Include employer, position held, and type of work): As part of the Morehead Summer Programs, I worked in Seattle, Washington, the summer of '84 with the Police Department and with the City Government. Last summer I did an internship with NASA in Huntsville, Alabama. This summer I'm studying French culture at the University of Touraine in Tours, France, for 4 weeks. During the first two weeks in August I will study under a violin teacher at Oxford, England, who developed the method under which I have been studying at Chapel Hill.

(PLEASE COMPLETE REVERSE ALSO)

Meg Gatling ('82)

III: IN YOUR OPINION, WHAT EFFECT HAS THE OMR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE OMR HIGH SCHOOL INTERNSHIP PROGRAMS.):

One of the biggest advantages of having participated in the OMR Internship Program was that I learned that I didn't want to do pure research as a career...I prefer a more "people-oriented" type of work. This was a valuable aspect of my experience because I previously had felt that "research" might be my niche. I found the lab work to be a learning experience too, re: procedures, etc. and I very much enjoyed the setting and also enjoyed the people with whom I worked.

NOTE: Original form completed by Meg Gatling's mother since Meg was abroad and subsequently edited by DUML administrative personnel.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Robin J. Cunningham ('82) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1983

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: UNC at Chapel Hill

Presently attending (X); Anticipated attendance ( )

MAJOR: Applied Mathematics DEGREE SOUGHT: Bachelor of Science

EXPECTED DATE OF GRADUATION: May 1987

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: Berkeley

ANTICIPATED MAJOR: Mathematics DEGREE SOUGHT: Ph.D.

HONORS (high school and college or university): National Merit Scholar.
Westinghouse Scholar
Phi Eta Sigma Honor Fraternity - freshman & sophomore
Phi Beta Kappa
President of UNC Chapter of Pi Mu Epsilon - the National Mathematics Honor Fraternity

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED: --

II: EMPLOYMENT OR PROFESSIONAL PLANS:

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (Include employer, position held, and type of work): Precalculus instructor at Duke's Talent Identification Program during the summers. Mathematics grader at UNC during the school months.

(PLEASE COMPLETE REVERSE ALSO)

Robin J. Cunningham ('82)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

The ONR research internship program enhanced my interest in the possibility of a career in research. My experience at the Marine Lab probably contributed to my decision to proceed directly to graduate studies next fall.

The Marine Lab program gave me an excellent chance to see and do experimental research firsthand. My work there took a lot of the mystery out of scientific research and made it seem a much more attainable field.

The internship was also my first living and working experience away from home, exposing me to research responsibilities and a chance to feel independent.

The program was overall a very positive enriching experience. I wouldn't trade it.

The only shortcoming the program had was that there was only one other person my age (16) living on the island, one of the other interns.

Duke University Marine Laboratory
Beaufort, North Carolina

DUML HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Linda Paylor ('82) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1983

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: East Carolina University
Presently attending (X); Anticipated attendance ( )
MAJOR: Math (Business minor) DEGREE SOUGHT: Bachelor of Arts
EXPECTED DATE OF GRADUATION: May 1987

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:
ANTICIPATED MAJOR: DEGREE SOUGHT:

HONORS (High school and college or university): Health & P.E. Award; Geometry Award; Spanish Award; National Honor Society; Student Government (Sec.-Treas.); Band Officer (Treas.-Sec.-V. President); Senior Award; John Philip Sousa Award (Band); Jr. Woman's Beaufort Scholarship; Spelling Bee Award; Morehead Scholarship nominee; District Science and Math representative at E.C.U. (Greenville); recipient of Elk's Lodge Scholarship; May Queen: Freshman and Senior Class Favorite; Senior Superlatives (most likely to succeed; most talented)

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:
Prepared a scientific manuscript: "Asymmetrical Tidal Patterns of Reproduction in Fiddler Crabs"

II: EMPLOYMENT OR PROFESSIONAL PLANS: I plan to pursue a career in a math and/or business oriented job.

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (Include employer, position held, and type of work): Waitress at Sanitary Restaurant, Morehead City, NC--greeting and serving patrons and at various times assigning specific duties to my co-workers.

(PLEASE COMPLETE REVERSE ALSO)

Linda Paylor ('82)

III: IN YOUR OPINION, WHAT EFFECT HAS THE DUML HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE DUML HIGH SCHOOL INTERNSHIP PROGRAMS.):

The program gave me my first experience of working in possible career related activities. Although I thoroughly enjoyed my internship, my interest is more in a math related career. However, the experience of assuming designated responsibilities and the scientific experiments that I participated in were very rewarding and when completed I felt a sense of pride knowing the data I had contributed would be beneficial to marine science.

Because I feel that it is an honor to be chosen for this DUML High School Internship Program, my suggestion for future programs would include more publicity during the actual internship. I was never given any recognition by the media during my participation in the program.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Amy Batts ('83)

HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): June 1984

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: North Carolina State University
Presently attending (X); Anticipated attendance ( )
MAJOR: Metallurgical Engineering DEGREE SOUGHT: Bachelor of Science
EXPECTED DATE OF GRADUATION: May 1988

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:
ANTICIPATED MAJOR: DEGREE SOUGHT:

HONORS (High school and college or university):
Girl's State English & Science Awards; Valedictorian; Junior Science and Humanities Symposium, national level; Dean's List--NCSU; NCSU Tutors Program; Honors English Club

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:
"Inhibition of Barnacle Settlement by Natural Products from a Sponge" published June 1984 in BASE Journal of Science and Technology, University of California - Berkeley

II: EMPLOYMENT OR PROFESSIONAL PLANS: Industrial work for the steel industry

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (Include employer, position held, and type of work): Co-op job for the Naval Air Rework Facility, Cherry Point, NC--High Polymer Branch, Navair Engineering Support Office; Frank Russo, Supervisor

(PLEASE COMPLETE REVERSE ALSO)

Amy Batts ('83)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

My experiences at DUML were certainly a major factor in my career decision. After the summer I spent there, I knew I could never pursue any vocation where I wouldn't be in a laboratory. I developed a strong love for science and technology that summer that I have never lost.

But science wasn't all I experienced while at Duke. I met people from all over the world and developed mature friendships that broadened my social horizons unbelievably.

My ONR job was my favorite of all the jobs I've ever held. Many is the time I've wanted to go back. I wish everyone could have a job they enjoyed so much. I hope the ONR program will continue to exist and instill in its employees an undying devotion to science like it has in me.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Vincent Knight ('83)

HOME ADDRESS (If your home address has changed, please note new address):
Rte. 3, Box 317
Mt. Gilead, NC 27306

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1984

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: Davidson College
Presently attending (X); Anticipated attendance ( )
MAJOR: Mathematics DEGREE SOUGHT: Bachelor of Arts
EXPECTED DATE OF GRADUATION: May 1988

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: undecided
ANTICIPATED MAJOR: Medicine DEGREE SOUGHT: M.D.; Ph.D.

HONORS (High school and college or university):
Edward Crossland Stuart Scholarship to attend Davidson College
Air Force ROTC 4-year Scholarship
National Achievement Scholarship
Accepted into Brown University's 7-year Medical Program; awarded the Brown University Honor's Scholarship

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:

II: EMPLOYMENT OR PROFESSIONAL PLANS: Planning to specialize in obstetrics, neonatology or pediatrics

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (include employer, position held, and type of work): Southwestern - student manager - train and manage students in the direct sales of educational material. Davidson College Dining Services - caterer

(PLEASE COMPLETE REVERSE ALSO)

Vincent Knight ('83)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

The Internship Program at Beaufort offered the great opportunity to actually live the life-style of a researcher. This is great because before this experience, I didn't know whether or not my interest would lie in research or practicing medicine. Now I can only see myself as a part-time researcher instead of full-time. This gave me some direction. Futhermore, it has given me the desire to pursue summer employment in the practical field of medicine. Therefore, for the summer of '87, I am pursuing the position of an intern at the Mlingo Baptist Hospital in the Cameroon Republic of West Africa.

I feel the program was very well organized. Having had the chance to actually live on Piver's Island gave me an extended opportunity to see researchers at work during all parts of the day. The guidance for the students' research was great. My help came mostly from Gerald and Bruce, who taught me the uses of the various instruments and lab techniques. Lectures were informative, when they involved a related field to one's area of study.

My specific program was divided into 4 weeks of introduction and 4 weeks on an independent project. I feel that less time is needed in the introduction, and more time should be devoted to your specific project. I suggest that the program be lengthened, with or without a pay increase, or more of the time be allotted to the independent project.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Rebecca Heath Cole ('84) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1985

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: St. Mary's College (1984-85) East Carolina University

Presently attending (X); Anticipated attendance ( )

MAJOR: Chemistry DEGREE SOUGHT: Bachelor of Science

EXPECTED DATE OF GRADUATION: 1988

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: not sure--medical school

ANTICIPATED MAJOR: Pediatrics DEGREE SOUGHT: M.D. and/or M.D.-Ph.D.

HONORS (high school and college or university):
Phi Theta Kappa (Honor Society)--honor society (high school) at St. Mary's College in Raleigh
Alpha Epsilon Delta (Premed Honor Society) at ECU; James McDaniel Award (most outstanding pledge to AED)

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED: March 1985 I presented my paper, "Hatching Rhythms in Grass Shrimp" (the one I worked on during the summer at Duke in 1984) at the North Carolina Science Academy Meeting at Guilford College

II: EMPLOYMENT OR PROFESSIONAL PLANS: After 4 years of undergraduate study, I plan to attend medical school and obtain an M.D. or M.D.-Ph.D. - plan to specialize in pediatrics and carry on research as well

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (include employer, position held, and type of work): Waitress during the summers at various restaurants (The Steeds, The Net House, Donna Byrd, The Gourmet Galley Cafe); during the school year I tutor

(PLEASE COMPLETE REVERSE ALSO)

Rebecca Heath Cole ('84)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

The Internship Program affected my career choices enormously! I now wish to go into research as well as medicine (thus I plan to obtain a M.D.-Ph.D. degree). I was able to see research first-hand and realized how much I enjoyed the challenge of the unknown. The program also made me think about why certain things happen as they do (cause and effect).

I think applicants should be chosen on a basis of interest (not mainly academic or financial need). This is because the program would reinforce their career goals as a biologist. This program would not be as effective if applicants were chosen in order to try to begin students thinking about being biologists.

I enjoyed this program and highly recommend its continuation.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Brian T. Rice ('84) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1985

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: Oberlin College
Presently attending (X); Anticipated attendance ( )
MAJOR: undeclared DEGREE SOUGHT: Bachelor of Arts
EXPECTED DATE OF GRADUATION:

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: ?
ANTICIPATED MAJOR: ? DEGREE SOUGHT: ?

HONORS (High school and college or university): 1985 National Merit Scholar

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:

II: EMPLOYMENT OR PROFESSIONAL PLANS: ?

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (Include employer, position held, and type of work): ?

(PLEASE COMPLETE REVERSE ALSO)

Brian T. Rice ('84)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

It's hard to say. My academic and career plans were nebulous then and they're equally nebulous now. Nonetheless, I found the program valuable for the following reasons:

It gave me an opportunity to participate in actual ongoing research. I have always been attuned to the scientific viewpoint, and this experience intensified that.

My work with computers has proved very valuable. I have used the statistical and data management skills I learned on several occasions.

The fact that I was independant in almost all respects while in the program made a difference in my personal development.

Duke University Marine Laboratory
Beaufort, North Carolina

OMR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Laura S. Barlow ('85) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1986

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: Duke University

Presently attending ( ); Anticipated attendance (X)

MAJOR: Biology DEGREE SOUGHT: Bachelor of Science

EXPECTED DATE OF GRADUATION: 1990

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: Duke University (?)

ANTICIPATED MAJOR: Medicine DEGREE SOUGHT: M.D.

HONORS (high school and college or university):

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:
ASZ Convention, Baltimore, Maryland, 12/85, poster presented

II: EMPLOYMENT OR PROFESSIONAL PLANS: Physician

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (include employer, position held, and type of work): Federal Alley Restaurant, hostess/waitress; field assistant for OMR student research with Dan Rittschof

(PLEASE COMPLETE REVERSE ALSO)

Laura S. Barlow ('85)

III: IN YOUR OPINION, WHAT EFFECT HAS THE OMR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE OMR HIGH SCHOOL INTERNSHIP PROGRAMS.):

(No response to this question.)

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Amy Jo Gillespie ('85) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1986

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: East Carolina University
Presently attending (X); Anticipated attendance ( )
MAJOR: Medical Technology DEGREE SOUGHT: Bachelor of Science
EXPECTED DATE OF GRADUATION: 1990

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: none, as of present
ANTICIPATED MAJOR: DEGREE SOUGHT:

HONORS (high school and college or university):
NEDT - high score award
N.C. State Scholars Award
Presidental Academic Award
National Honor Society Outstanding Member Scholarship

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED: None

II: EMPLOYMENT OR PROFESSIONAL PLANS: I plan to get a degree in Medical Technology and then I would like to work in a medical research lab.

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (Include employer, position held, and type of work): McDonald's--cashier (taking orders & money); Duke Marine Lab--research assistant (research & lab skills); Western Steer--line girl (taking food orders); Golden Corral--waitress (waiting on customers)

(PLEASE COMPLETE REVERSE ALSO)

Amy Jo Gillespie ('85)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

Being in the ONR High School Internship Program provided me with invaluable knowledge and opportunities. I was able to learn how to operate expensive and sophisticated laboratory machinery that I never would have dreamed of before. Another important lesson learned concerns the employment of the scientific method. In high school the importance of the scientific method was never really stressed. However, at the lab it proved to be the basis of all that happened. I soon learned that without strict procedure and organization nothing would get done in experimenting. From my experience, I learned that science and scientists are not mythical creatures that can do no wrong, instead science is hard work. It requires patience, persistence and a certain inner discipline.

Thus, from my summer in the ONR Program, I decided that research science was what I really wanted to do. I plan to get a Bachelor of Science degree in the field of Medical Technology so that I can get a job in a medical research institute.

The only bad thing I can say about the ONR Program would be that I think the students and their research projects should be matched together more carefully. I think the students should be able to see a list of proposed projects and let them pick something that interests them or something they know a little about.

In closing, I want to say that I think the program is FANTASTIC and I want to thank all the wonderful people at the lab that helped me to learn so much!

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Bobby Bryan Goodwin, Jr. ('85)

HOME ADDRESS (If your home address has changed, please note new address):
Bobby Bryan Goodwin
201 Connor
UNC-Chapel Hill
Chapel Hill, NC 27514

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1986

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: UNC-Chapel Hill

Presently attending (X); Anticipated attendance ( )

MAJOR: undecided DEGREE SOUGHT:

EXPECTED DATE OF GRADUATION: Spring 1990

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:

ANTICIPATED MAJOR: DEGREE SOUGHT:

HONORS (high school and college or university):
A.P. English
Beta Club

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:
All those dealing with my employment in the ONR High School Internship Program

II: EMPLOYMENT OR PROFESSIONAL PLANS: Undecided

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (Include employer, position held, and type of work): ONR High School Internship Program/Duke University

(PLEASE COMPLETE REVERSE ALSO)

Bobby Bryan Goodwin, Jr. ('85)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

I regard my summer of work at Duke Marine Laboratory as a very educational and rewarding experience. I am currently attending UNC-Chapel Hill and I am still very undecided about my career pursuits. I definitely look back at my summer at Duke as a learning experience. I truly believe that further exposure and job related experience will help me to decide whether or not I wish to pursue a career in the field of marine biology.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Melissa Anne Venable ('85) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1986

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: Wake Forest University

Presently attending ( ); Anticipated attendance (X)

MAJOR: Biology DEGREE SOUGHT: Bachelor of Science

EXPECTED DATE OF GRADUATION: May 1990

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: Not known

ANTICIPATED MAJOR: Not known DEGREE SOUGHT:

HONORS (high school and college or university):
National Honor Society - 11 & 12
Beta Club - 9 & 10
South Carolina Business Week - 11
High School rank - top 1/10
Varsity Softball - Letter - 10

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:
Presented paper at 7th Southeastern Phycological Colloquy, Beaufort, NC, October 1985, "Growth Rates of Fugitive and Persistent Seaweed Species in Response to Varied but Non-random Additions of N-nutrient"; third author of paper presented by J. Ramus and V. Henley, American Society of Limnology and Oceanography, Inc. - June 1986

II: EMPLOYMENT OR PROFESSIONAL PLANS: I would like to eventually work doing research at a marine laboratory or possibly with a company; but it is too soon for me to make any definite plans of this kind.

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (include employer, position held, and type of work):

(PLEASE COMPLETE REVERSE ALSO)

Melissa Anne Venable ('85)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

The ONR Internship Program has definitely influenced my career plans and academic pursuits. I have always wanted to enter a science related field, and the program at DUML has led me toward marine science. I want to pursue a career in research, but I'm still not sure whether to go into botany, geology, or chemistry. When I enter college in the fall, I plan to experience these areas, and more, in order to decide which one is best for me.

One thing that I really enjoyed about the program was the atmosphere of Duke Marine Lab. I was readily taken in, by the students and the faculty, as a part of the Lab itself. I was also given a lot of independence by my advisor, Dr. J. Ramus. This helped me to begin to call on my own reasoning and resources. My advisor and the people in his lab have also helped me out in many ways since last summer. Among other things, they allowed me to return last January, and helped me with a small project for a high school class.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM
POST-INTERNSHIP INFORMATION

NAME: Pamela Lynn Yount ('85) HOME ADDRESS (If your home address has changed, please note new address):

I. EDUCATION

YEAR OF HIGH SCHOOL GRADUATION (If you have not yet graduated, please put expected year of graduation): 1986

NAME OF UNDERGRADUATE COLLEGE OR UNIVERSITY: Duke University
Presently attending ( ); Anticipated attendance (X)
MAJOR: Prened DEGREE SOUGHT: Bachelor of Science
EXPECTED DATE OF GRADUATION: 1990

NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: Medical school
ANTICIPATED MAJOR: _____ DEGREE SOUGHT: Ph.D.

HONORS (high school and college or university):
Attended N.C. School of Science and Mathematics
Attended N.C. Governor's School
Granted $1500 for summer '86 research from the Explorers Club

PUBLICATIONS, PAPERS PRESENTED, PROFESSIONAL MEETINGS ATTENDED:

II: EMPLOYMENT OR PROFESSIONAL PLANS: Doctor/Research Scientist

LIST ANY FULL-TIME OR PART-TIME EMPLOYMENT (include employer, position held, and type of work):

(PLEASE COMPLETE REVERSE ALSO)

Pamela Lynn Yount ('85)

III: IN YOUR OPINION, WHAT EFFECT HAS THE ONR HIGH SCHOOL INTERNSHIP PROGRAM HAD UPON YOUR ACADEMIC AND/OR CAREER CHOICES OR PLANS AS WELL AS ACTUAL ACADEMIC OR JOB-RELATED ACTIVITIES OR PURSUITS? LIST ANY OTHER EFFECTS. INCLUDE PROS AND CONS OF PROGRAM EXPERIENCE. (INCLUDE ANY RECOMMENDATIONS OR SUGGESTIONS FOR FUTURE ONR HIGH SCHOOL INTERNSHIP PROGRAMS.):

It introduced me to the research field and helped me to decide if research was the direction I should head in.

Appendix 4b. ONR HSIP Post-Internship Information (1986-1990)

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Matt Wachowiak
PERMANENT ADDRESS:	3751 S.W. 20th Ave., Apt. 64 Gainesville, FL 32607
YEAR OF INTERNSHIP:	1986

I. EDUCATION

A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1987
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending ( ) Anticipated attendance ( )	Duke University
MAJOR:	Zoology
DEGREE SOUGHT:	B.S., May 1990
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	University of Florida
ANTICIPATED MAJOR:	Neuroscience
DEGREE SOUGHT:	Ph.D.
D. HONORS RECEIVED (high school and college or university)	Dean's List 1988-90, Duke U. Graduated Cum Laude May 1990 NSF Predoctoral Fellow Presidential Fellow, University of Florida
E. PUBLICATIONS (scientific):	Wellins, C.A., D. Rittschof, and M. Wachowiak. 1989. Location of volatile odor sources by ghost crab Ocypode quadrata (Fabricius). J. Chem. Ecol. 15:1161-1169.
PAPERS PRESENTED (scientific):	ONR HSIP paper; posters presented at meetings (see below)
PROFESSIONAL MEETINGS ATTENDED (scientific):	Am. Soc. Zoo., 1986 Assoc. Chemorec. Sci., 1991 Chem. Signals in Inverts., 1991
II. EMPLOYMENT OR PROFESSIONAL PLANS:	Pursuing Ph.D. in neurosci.
LIST FULL-TIME OR PART-TIME EMPLOYMENT:	Res. Tech., DUML summer '89; Res. Tech., Monell Chemical Senses Center 10/90-09/91 - nerve record. & data anal.

Wachowiak, Matt (1986)

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

The ONR HSIP had a great effect on my academic and career directions. It is safe to say that I would not be doing what I am now doing if not for the HSIP. As an intern, I worked with Dan Rittschof on location of odor cues by ghost crabs. I attended a professional meeting and was coauthor of a paper as a direct result of this work. More importantly, though, the experience sparked my interest in chemoreception and behavior. I have continued to pursue this interest, and am now starting graduate work on olfaction in lobsters. Because of my early experience in this field as a high school intern, I was able to take advantage of many subsequent opportunities, such as working in various labs and attending meetings. This has given me a great head start in my pursuit of an academic research career.

Suggestions for future: Better orientation for new interns; more encouragement to follow up project, either as continued research or by attending meetings.

Duke University Marine Laboratory
Beaufort, North Carolina

GNR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Ann-Marie Willis
PERMANENT ADDRESS:	P.O. Box 1716 Morehead City, NC 28557
YEAR OF INTERNSHIP:	1986
I. EDUCATION	
A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1987
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending ( ) Anticipated attendance ( )	N.C. State University
MAJOR:	Psychology
DEGREE SOUGHT:	B.A. May 1991
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	Meredith College
ANTICIPATED MAJOR:	
DEGREE SOUGHT:	K-6 Teacher Certification, December 1991
D. HONORS RECEIVED (high school and college or university)	N.C. Teaching Fellows Prog. Project Wild Certification (environmental teaching)
E. PUBLICATIONS (scientific):	None
PAPERS PRESENTED (scientific):	GNR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II. EMPLOYMENT OR PROFESSIONAL PLANS:	Teach elementary school and continue education in field of education
LIST FULL-TIME OR PART-TIME EMPLOYMENT:	Acad. pre-school, teacher

Willis, Ann-Marie (1986)

III. In your opinion, what effects has the GNR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your GNR HSIP program experience. (Include any recommendations or suggestions for future GNR High School Internship Programs.)

As a result of my GNR Internship, my initial major at NCSU was science education (secondary school). My concentration was to be in biology with a second major in math. The age-level of secondary school changed my mind. However, I am still interested in science on the elementary school level, and is even pursuing a degree in marine biology in a few years. I learned through my experience at Duke Marine Lab how important science is in our society, and I hope to teach my students (even at a young age) to appreciate it.

My experience at the Lab was positive. I still hold great pride for the map I helped construct. Working with Dr. Kirby-Smith is something I will never forget. It is very exciting for a high school student to work along beside a college professor. It was also quite a learning experience. It first got me very excited about science and I hope to transfer my excitement to my students. It is important in our society for young people to care about science. Programs, such as GNR HSIP, help spread knowledge about science and excitement about the field. Please help continue this excitement for more young people.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME: Sarah A. Boone

PERMANENT ADDRESS: RR2, Box 26
Milford, IA 51351

YEAR OF INTERNSHIP: 1987

I. EDUCATION

A. YEAR OF HIGH SCHOOL GRADUATION
(or expected year of graduation): 1988

B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Iowa State University
Presently attending (X)
Anticipated attendance ( )

MAJOR: Psychology/Child Development
DEGREE SOUGHT: Bachelor's degree

C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: Uniformed Services School (Bethesda, MD)

ANTICIPATED MAJOR: Clinical Psychology
DEGREE SOUGHT: Master's degree

D. HONORS RECEIVED (high school and college or university)
Academic excellence
National Honor Society
NROTC Scholarship
Geography award, Sons of American Revolution honor
Retired Officer's award

E. PUBLICATIONS (scientific): None

PAPERS PRESENTED (scientific): ONR HSIP paper

PROFESSIONAL MEETINGS ATTENDED (scientific): None

II. EMPLOYMENT OR PROFESSIONAL PLANS: Child Psychology
(naval hospitals)

LIST FULL-TIME OR PART-TIME EMPLOYMENT: Summer job - waitress

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

Even though I have chosen Psychology as my major, the scientific aspects of the internship made an impact on my choices of science classes in college and how much easier they were to understand and relate to. Dr. Ramus taught me not only how to use many types of hardware, but also how to test and gather data. This particular aspect has significantly helped me in understanding probability and trends in psychological research.

The experience of working at the Marine Lab will never be forgotten. I learned so much about marine life, science, testing samples, and learning by trial and error.

I have no complaints about that summer only one request - make sure the intern understands completely what is expected and how to go about collecting the data. There were many times I found myself confused and lost.

Thank you for giving me the opportunity to comment on my internship. The experience is something I will value for a long time.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Laurel P. Falls
PERMANENT ADDRESS:	2410 Evans Street Morehead City, NC 28557
YEAR OF INTERNSHIP:	1987

I. EDUCATION

A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1988
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending (x) Anticipated attendance ( )	UNC-Chapel Hill
MAJOR:	Journalism
DEGREE SOUGHT:	B.A.
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	--
ANTICIPATED MAJOR:	--
DEGREE SOUGHT:	--
D. HONORS RECEIVED (high school and college or university)	High School: National Honor Society Academic Achievement Awards Robert C. Byrd Honor College: Honor student Dean's list Senior marshal
E. PUBLICATIONS (scientific):	None
PAPERS PRESENTED (scientific):	ONR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II. EMPLOYMENT OR PROFESSIONAL PLANS:	Writing for a newspaper
LIST FULL-TIME OR PART-TIME EMPLOYMENT:	Carteret County News-Times, general reporter - summer

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

Although my chosen major is not in a scientific field, my internship has been a positive influence in my studies. I learned a great deal about scientific research during the program and am planning to use that information in my writing to focus on scientific journalism.

My internship gave me a different perspective on a number of my science courses at UNC-Chapel Hill because I already knew what took place outside the classroom.

My experience in the program was most definitely an overall positive thing. One suggestion I can make is to give students more background about their project and how it relates to their mentor's research.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Jennifer M. Bennett
PERMANENT ADDRESS:	P.O. Box 1659 Atlantic Beach, NC 28512
YEAR OF INTERNSHIP:	1988

I. EDUCATION

A.	YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1989
B.	NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending (x) Anticipated attendance ( )	U.S. Military Academy
	MAJOR:	Philosophy (POS)
	DEGREE SOUGHT:	B.S.
C.	NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	Duke University
	ANTICIPATED MAJOR:	Medicine
	DEGREE SOUGHT:	M.D.
D.	HONORS RECEIVED (high school and college or university)	National Honor Society Academic Achievement Awards
E.	PUBLICATIONS (scientific):	None
	PAPERS PRESENTED (scientific):	ONR HSIP paper
	PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II.	EMPLOYMENT OR PROFESSIONAL PLANS:	Army, medical school
	LIST FULL-TIME OR PART-TIME EMPLOYMENT:	U.S. Army

Bennett, Jennifer M. (1988)

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

The ONR High School Internship Program was very valuable to me as an individual and as a student. The ONR program gave me the opportunity to "stand out" among my peers in my college application procedures. With the ONR program I was able to experience the college research atmosphere that many college age students do not get to experience. The program let me be creative and it let me implement my creativity with actual research and a project.

I felt lucky to have so much available for my use at the Marine Laboratory. In fact, I wish that I had been more productive and confident in my research. In order to make full use of my resources and to gain the biggest educational benefit, I could have used more professional guidance and instruction. This may seem to take away from the "creativity and initiative of the individual", but I believe it would be an improvement for the interns in future programs.

Finally, one of the biggest benefits of the intern program is actually associating with college professionals and getting a taste for the experience of higher education. The program at the Marine Lab inspired my creativity and my willingness to complete a project through every step and method and to gain a sense of accomplishment upon its completion.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Sharon Celeste Posey
PERMANENT ADDRESS:	920 Carnoustie Circle Cary, NC 27511
YEAR OF INTERNSHIP:	1988
I. EDUCATION	
A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1989
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending (x) Anticipated attendance ( )	Duke University
MAJOR:	Biology; molecular concentr.
DEGREE SOUGHT:	B.S.
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	Undecided
ANTICIPATED MAJOR:	Immunology
DEGREE SOUGHT:	Ph.D.; possibly M.D./Ph.D.
D. HONORS RECEIVED (high school and college or university)	5th place 1989 Westinghouse Science Talent Search Ntl. Merit Finalist/Scholar IBM Watson Scholarship Provost Award for Special Merit (full tuition scholarship to Duke U.) Awards for Latin/Math Contst Univ: Dean's List with Distinction, all 4 semest. Barry M. Goldwater Scholar
E. PUBLICATIONS (scientific):	None
PAPERS PRESENTED (scientific):	ONR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II. EMPLOYMENT OR PROFESSIONAL PLANS:	Career in medical research
LIST FULL-TIME OR PART-TIME EMPLOYMENT:	89/90 summer - CIBY-GEIGY intern; 91 summer - Admin. Asst. at IBM

III. In your opinion, what *effects* has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

To me, the study of biology can be classed into two distinct areas - small-thing biology (molecular biology, genetics, cell biology, microbiology, etc.) and large-thing biology (ecology, population studies, physiology, and most marine sciences). I had taken a course in high school (NCSSM) which allowed me to do independent research in small-thing biology, and I wanted an opportunity to experience large-thing biology. The ONR HSIP gave me this opportunity. I was trying to narrow down and sort out what kind of career I wanted - after my experience with the research into DNA manipulation in high school, I knew I wanted a career in research. My problem then became one of determining what sort of research. My internship at the Marine Lab enabled me to discover that I am more interested in biology at the cellular "sub-cellular" level than at the physiology/ecology level. In other words, to return to my original distinction, I am a small-thing biologist at heart. [Don't get me wrong - I thoroughly enjoyed my summer at DUML. But I do prefer working with things that grow in petri dishes to working with critters that run around on 8 legs who have no compunction about pinching one's thumb.]

Participating in the ONR HSIP also gave me great experience in general research techniques, techniques as simple as keeping a notebook, working with a budget, and writing and presenting a scientific report. The presentation I gave at the end of the summer outlining my work was my first real presentation to researchers/professors/scientists who were experts in the field of the paper I presented - a frightening and educational experience.

Other Effects: 1) Although the research project I entered in the 1989 Westinghouse Science Talent Search was the project which I worked on at NCSSM, I did use some of my DUML experiences in some parts of the application. 2) It's hard for me to separate out the effects of the ONR HSIP experience from the effects of stuff I did at NCSSM; however, I am sure the ONR HSIP has had a significant role in obtaining both the scholarships and the job offers (in research) I have received. Pros: Covered above, I believe. I also learned more about tides and fiddler crabs than I could have dreamed possible. Cons: Getting up at 4:00 a.m. for a week to check on release times of fiddler crabs. Seriously, I can't think of anything that definitely needs changing. I would suggest however, that interns are placed with professors and graduate students who definitely have projects designed for interns. I was fortunate in that the professor I worked for (well, his grad student, actually) had a project for me I could really get into and take off with. Some of the interns I knew were stuck with a lot of repetitive drudge work - perhaps necessary, but not exactly educational. [I realize that interns can be very useful when it comes to drudge work, and believe me I know most research is a lot of drudgery, but I think it's only fair an intern is given a project that at least has the potential of developing into interesting possibilities. At its core, research is learning how to ask questions, and I think interns ought to learn how to ask questions and be able to design ways to answer them. I was able to do this with my project; other interns I knew weren't.]

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Jay Cuthrell
PERMANENT ADDRESS:	P.O. Box 881 Beaufort, NC 28516
YEAR OF INTERNSHIP:	1989

I. EDUCATION

A.	YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1990
B.	NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending (x) Anticipated attendance ( )	N.C. State University
	MAJOR:	Materials Sci. & Engineering
	DEGREE SOUGHT:	B.A.
C.	NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	Unknown
	ANTICIPATED MAJOR:	--
	DEGREE SOUGHT:	M.A.
D.	HONORS RECEIVED (high school and college or university)	Science Award DOE H.S. Stu. Honors Program at Argonne Natl. Laboratory Teaching Fellows Scholarship NROTC 4-yr. Scholarship
E.	PUBLICATIONS (scientific):	None
	PAPERS PRESENTED (scientific):	ONR HSIP paper
	PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II.	*EMPLOYMENT OR PROFESSIONAL PLANS:*	--
	LIST FULL-TIME OR PART-TIME EMPLOYMENT:	Restaurant busboy; hardware store clerk

Cuthrell, Jay (1989)

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

The ONR HSIP had no real effect on my career plans, but it gave me a greater understanding of what ecology is and my impact on our natural resources. I know that I studied oysters (Crassostrea virginica) and I learned a great deal about what goes on at the lab and I am grateful for the opportunity.

The pros were excellent hours, good working companions, meaningful work and good pay. The cons were lack of time to prepare for entry into what to study for the summer and little exposure to studies other than the one assigned.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Chris Martin
PERMANENT ADDRESS:	P.O. Box 367 Atlantic Beach, NC 28512
YEAR OF INTERNSHIP:	1989
I. EDUCATION	
A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1990
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending (x) Anticipated attendance ( )	UNC-Chapel Hill
MAJOR:	Biology
DEGREE SOUGHT:	B.S.
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	UK
ANTICIPATED MAJOR:	Marine Biology
DEGREE SOUGHT:	Ph.D.
D. HONORS RECEIVED (high school and college or university)	High School: National Honor Society Most Outstanding Graduating Student Class Valedictorian WCHS Math Award Kiwanis Club Award Manly Mason Sci. Schlshp. Academic Achievement Award College: Dean's list
E. PUBLICATIONS (scientific):	None
PAPERS PRESENTED (scientific):	ONR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II. EMPLOYMENT OR PROFESSIONAL PLANS:	--
LIST FULL-TIME OR PART-TIME EMPLOYMENT:	DUML Lab Technician for Dr. W. Kirby-Smith

Martin, Chris (1989)

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

The internship has assured me that I want to go into Marine Biology as a course of study in college as well as a profession out of college. The internship has also given me a chance to see what it is like to work as a marine scientist. It has also given me a job at the Marine Lab. I enjoyed the internship and highly recommend it for the future.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:		Allison Smith
PERMANENT ADDRESS:		P.O. Box 116 Salter Path, NC 28575
YEAR OF INTERNSHIP:		1989
I. EDUCATION		
A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):		1990
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending (x) Anticipated attendance ( )		East Carolina University
	MAJOR:	Elementary Education
	DEGREE SOUGHT:	Teaching Degree
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:		--
	ANTICIPATED MAJOR:	--
	DEGREE SOUGHT:	--
D. HONORS RECEIVED (high school and college or university)		High School: National Honor Society Prospective Teacher Scholarship Loan College: Honor Roll
E. PUBLICATIONS (scientific):		None
PAPERS PRESENTED (scientific):		ONR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific):		None
II. EMPLOYMENT OR PROFESSIONAL PLANS:		Teacher (grades K-6) working in Carteret County
LIST FULL-TIME OR PART-TIME EMPLOYMENT:		Asst. Deli Manager

Smith, Allison (1989)

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

The effects of the ONR High School Internship Program were positive on me. I thought I wanted to be a marine biologist until I worked at the Lab. No offense, I thought it would be like Jacques Cousteau, but it wasn't. I saw the way it really was - time outside in the field, three times more research in the lab. When I found out how it was, I decided that I wasn't cut out to be a marine biologist. There were more pros than cons to my program experience. I learned time-management skills, how to use the IBM computer, and how to work and learn from other people who know a lot more than I did.

The cons were that my "instructor" had a real bad time relating to me and speaking in "laymens" terms so that I could understand what he was talking about. He also would not show up for work, maybe on a trip on work to Wilmington or something with his class, and he would leave me a note on his door telling me to go home. That was no problem, except that I lived 30 minutes away.

All in all, my experience was very enlightening.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Julie Cheu
PERMANENT ADDRESS:	4205 Bonwood Road Raleigh, NC 27612
YEAR OF INTERNSHIP:	1990

I. EDUCATION

A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation): 1991

B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: New York University
Presently attending ( )
Anticipated attendance (x Aug. '91)

MAJOR: Undecided
DEGREE SOUGHT: B.S.

C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND: Undecided

ANTICIPATED MAJOR: --
DEGREE SOUGHT: --

D. HONORS RECEIVED (high school and college or university)

Academic excellence awards
Jr. Acad. Sci. & Hum. Symp.
NYU Alumni Scholarship
Who's Who (HS stu. of Amer.)
NC Stu. Acad. Sci. Research
Boston U. Trustee Schlshp.
National Merit Finalist
Honorable Mention - Women's Art Club Competition

E. PUBLICATIONS (scientific): None
PAPERS PRESENTED (scientific): ONR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific): None

II. EMPLOYMENT OR PROFESSIONAL PLANS: Undecided

LIST FULL-TIME OR PART-TIME EMPLOYMENT: None except ONR HSIP

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

I have always been interested in biology, so I can't say ONR HSIP opened that door for me. Participating in the internship program did, however, make me much more aware of marine life than I had ever been before. In biology textbooks, marine life never seemed interesting - after all, it was grouped with all the rest of primitive life, like insects, for example. Working at the Marine Lab, I found it hard to ignore marine animals since I virtually lived with them. I discovered that organisms actually lived in the same shells used to make necklaces and earrings. My professor, Dr. Dan Rittschof, made it a special point to take me out at night to see bioluminescence and beaches coated with crabs. I learned all the weird things animals did to survive. Now, I have a new respect for animals; even insects seem rather intelligent with all the fancy equipment they've developed to kill and avoid being killed.

Not yet an undergraduate, I can't say what effect ONR HSIP has had on my job related activities or pursuits. Being a person of many interests, I don't even know if I'll go into science. Getting a chance to do my own research, however, did make science look a lot more appealing. My job at DUML was a lot more exciting than the two boring technician type lab jobs I had held before.

I'm a rather social person, but my roommate during my summer at DUML wasn't necessarily. I think we had different experiences at DUML because of that. Since the high school students outside of Carteret County tend to be the only people their age on the Island, maybe DUML could make some effort to introduce them to students in the area. Having use of a bicycle really helped me feel like I could "get away from it all" whenever I really wanted to, so I hope ONR keeps that for its students.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Sharon Chow
PERMANENT ADDRESS:	8849 Wildwood Links Raleigh, NC 27613
YEAR OF INTERNSHIP:	1990

I. EDUCATION

A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1991
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending ( ) Anticipated attendance (x)	UNC-Chapel Hill
MAJOR:	Premedical track
DEGREE SOUGHT:	B.S.
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	---
ANTICIPATED MAJOR:	---
DEGREE SOUGHT:	---
D. HONORS RECEIVED (high school and college or university)	Rhone Poulenc Agricultural Company Annual Schlshp '91
E. PUBLICATIONS (scientific):	None
PAPERS PRESENTED (scientific):	ONR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II. EMPLOYMENT OR PROFESSIONAL PLANS:	---
LIST FULL-TIME OR PART-TIME EMPLOYMENT:	Secretarial work - General Electric Mortgage Insr. Co.

57

Chow, Sharon (1990)

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

My senior year at NCSSM, I enrolled in the Research in Biology course. I was interested in chemical extractions and chromotography techniques I had learned to use in my barnacle project (ONR HSIP) the summer before. I worked on a project studying the compounds in muscle wall of the North American leech, Macrobdella decora. The previous practice made my lab work more time efficient, but my leech project was a lot more frustrating. It was very convenient that Dr. Clare (ONR HSIP mentor) was my supervisor and had already been working with the barnacle for a while. He supplied me with introductory material and explained the basic chemistry involved in the synthesis of barnacle hatching substance. I didn't fully realize or appreciate this advantage until my leech project and I had to find information and equipment on my own and without much direction.

I enjoyed research work; it was outdoors, relaxed and informal.

I don't know what I'm going to major in at UNC-Chapel Hill. I am interested in art. There is really no connection. I plan to follow the premedical track.

One thing that always comes to mind when thinking about the summer of 1990, was how shocking the living experience was to me. Four or five years of age really does make a difference between some individuals, and age isn't a necessary factor in one's level of maturity.

I hope DUML will continue to offer this program ... it is a very special opportunity that can be very fulfilling. I would suggest a short break in the middle of the 10 weeks.

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Zoey A. Forward
PERMANENT ADDRESS:	414 Ann Street Beaufort, NC 28516
YEAR OF INTERNSHIP:	1990

I. EDUCATION

A. YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1991
B. NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending ( ) Anticipated attendance (x fall '91)	Duke University
MAJOR:	Biology (Pre-vet)
DEGREE SOUGHT:	B.A.
C. NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	N.C. State Univ. College of Veterinary Medicine
ANTICIPATED MAJOR:	--
DEGREE SOUGHT:	D.V.M.
D. HONORS RECEIVED (high school and college or university)	Overall English, Math, and Science awards Top Twenty (4 years) Science Fair awards Presid. Acad. Fitness Award Governor's School 1989 Scholar Athlete Awards Principal's List Valedictorian Chief Marshall grad. 1990 H.S. Math Competition partic Quiz Bowl & Science Olympiad
E. PUBLICATIONS (scientific):	None
PAPERS PRESENTED (scientific):	ONR HSIP paper
PROFESSIONAL MEETINGS ATTENDED (scientific):	None
II. EMPLOYMENT OR PROFESSIONAL PLANS:	Veterinarian
LIST FULL-TIME OR PART-TIME EMPLOYMENT:	Sum '91 - craft beadworking

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

The ONR HSIP was a wonderful experience that I look back on and wish was never ending!

Duke University Marine Laboratory
Beaufort, North Carolina

ONR HIGH SCHOOL INTERNSHIP PROGRAM

POST-INTERNSHIP INFORMATION

NAME:	Elizabeth A. Oliver
PERMANENT ADDRESS:	95 Holly Court Morehead City, NC 28557
YEAR OF INTERNSHIP:	1990

I. EDUCATION

A.	YEAR OF HIGH SCHOOL GRADUATION (or expected year of graduation):	1991
B.	NAME OF UNDERGRAD COLLEGE OR UNIVERSITY: Presently attending (x) Anticipated attendance ( )	UNC-Chapel Hill
	MAJOR:	Chemistry
	DEGREE SOUGHT:	B.S.
C.	NAME OF GRADUATE OR PROFESSIONAL SCHOOL YOU PLAN TO ATTEND:	Unknown
	ANTICIPATED MAJOR:	--
	DEGREE SOUGHT:	--
D.	HONORS RECEIVED (high school and college or university)	Jr. Class Secretary Sr. Class Vice President National Honor Society North Carolina Scholar Presid. Acad. Fitness Award Tandy Acad. Excell. Award
E.	PUBLICATIONS (scientific):	None
	PAPERS PRESENTED (scientific):	ONR HSIP paper
	PROFESSIONAL MEETINGS ATTENDED (scientific):	None

II. EMPLOYMENT OR PROFESSIONAL PLANS: --

LIST FULL-TIME OR PART-TIME EMPLOYMENT: Salad girl at Galley Stack

Oliver, Elizabeth (1990)

III. In your opinion, what effects has the ONR High School Internship Program had upon your academic and/or career choices or plans, as well as actual academic or job-related activities or pursuits? List any other effects. Include pros and cons of your ONR HSIP program experience. (Include any recommendations or suggestions for future ONR High School Internship Programs.)

The ONR HSIP was beneficial for me in that it exposed me to the work involved in actual scientific research. Without this program, I would not have gained this knowledge. It has shown me that though research may be tedious and slow, it can be rewarding when the end results are discovered. The rewarding aspect of research has helped me in possibly majoring in science in college. I would recommend this program to anyone with any interest in science.

I thought the program was very well organized and had no problems with it. It was very helpful that the hours were flexible so other activities could be pursued through the summer.

I think it is important that this program be renewed because it gives high school students a valuable experience in scientific research which they cannot get elsewhere. Personally, I think it is the best job opportunity for a high school student in Carteret County.

Appendix 5. ONR HSIP Summary of Participants' Post-program Higher Education & Career Plans/Fields 1982 - 1990

EDUCATION

Institution	Number of Participants
Cornell University (Ithaca, NY)	1
Davidson College (Davidson, NC)	1
Duke University (Durham, NC)	9
East Carolina University (Greenville, NC)	4
Iowa State University (Ames, IA)	1
Massachusetts Inst. Technology (Cambridge, MA)	1
New York University (New York, NY)	1
North Carolina State University (Raleigh, NC)	3
North Carolina, University of (Chapel Hill, NC)	14
North Carolina, University of (Wilmilngton, NC)	1
Oberlin College (Oberlin, OH)	1
Tulane University (New Orleans, LA)	1
U.S. Military Academy (West Point, NY)	1
U.S. Naval Academy (Annapolis, MD)	2
Wake Forest University (Winston-Salem, NC)	1
Wofford College (Spartanburg, SC)	1
Yale University (New Haven, CT)	1
Major Departments	
Biology	10
Biomedical Engineering	2
Biomedical Science	2
Chemistry	2
Computer Science	1
Education	2
Engineering	2
Journalism	2
Mathematics	3
Medical Technology	2
Military Science	1
Philosophy	1
Premedicine	1
Preveterinary Medicine	1
Psychology	2
Zoology	1
Undeclared	5

Summary of Participants' Post-program Higher Education & Career Plans/Fields (cont'd)

CAREER PLANS/FIELDS

Education	2
Engineering, Biomedical	1
Engineering, Industrial	2
Environmental Science	1
Journalism	2
Marine Research	1
Math/Business	1
Medical Practice	6
Medical Research	4
Navy, U.S.	1
Neuroscience	1
Psychology, Child	1
Science (unspecified)	1
Veterinary Medicine	1
Undecided	7

Throughout this statement the masculine pronoun is intended as a comprehensive word to indicate both males and females.

CONTINGENT FEE

(a) He ___ has, _X__ has not, employed or retained any company or persons (other than a full-time bona fide employee working solely for the offeror) to solicit or secure this contract, and (b) he ___ has, _X__ has not, paid or agreed to pay any company or person (other than a full-time bona fide employee working solely for the offeror) any fee, commission, percentage, or brokerage fee contingent upon or resulting from the award of this contract; and agrees to furnish information relating to (a) and (b) above, as requested by the Contracting Officer. (Interpretation of the representative, including the term, "bona fide employee," see Code of Federal Regulations, Title 41, Subpart -1.5.)

EQUAL OPPORTUNITY

(a) He _X__ has, ___ has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause herein or the clause originally contained in section 301 of Executive Order No. 10925; or the clause contained in Section 201 of Executive Order No. 11114; that he _X__ has, ___ has not, filed any required compliance reports, signed by proposed subcontractors, or it will be obtained prior to subcontract awards. (The above representation need not be submitted in connection with contracts or subcontracts which are exempt of the equal opportunity clause.)

(b) The bidder (or offeror) represents that (1) he _X__ has developed and has on file, ___ has not developed and does not have on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor. [The above representation shall be completed by each bidder (or offeror) whose bid (offer) is $50,000 or more and who has 50 or more employees.]

STATEMENT REGARDING ACQUISITION OF FACILITIES

The contractor, represented by an executive corporate official, or his equivalent in non-corporate entities, either expresses in writing his unwillingness or financial inability to acquire the necessary facilities with his resources.

EQUIPMENT PURCHASING

Duke University cannot and will not purchase any equipment requested in this proposal.

Lorna Hicks

Lorna Hicks, Acting Director
Office of Research Support

Principal Investigator

Dianne R. Gagnon

Dianne R. Gagnon
Business Manager

I hereby agree with the above statements: